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Two New Syphacia (Nematoda: Oxyuridae) and Observations on the Inner Circle Circumoral Papillae in North American Species of the Genus*

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The material upon which this study is based was collected by the writers in the states of Ohio, Wisconsin, Illinois, Wyoming, and in Alaska. Additional specimens from Wyoming were contributed by Merle Kuns, Department of Biology, Purdue University. All Wyoming collecting was made possible by grants from the New York Zoological Society's 1948 Research Program at Jackson Hole Wildlife Park.

The technical aspects of this study were begun by the senior author while he was engaged as Consultant with the U. S. Public Health Service, Alaska Health and Sanitation Activities, at Anchorage, Alaska, during the summer of 1949. A considerable abundance of material was available in connection with this work, in addition to that which had been collected during our wildlife parasite investigations of the past several years.

Syphacia arctica n. sp.

Female: Length 5.41-5.55 mm.; width .300-.320 mm. just posterior to vulva. Cervical cuticular inflation present, beginning at anterior end and extending about 170 μ posteriorly. Lateral alae begin just behind cervical inflation and extend to level of anus. Esophagus, including bulb, 254-300 μ long by 68-72 μ , wide near posterior end; bulb about 104-110 μ long by 115-119 μ wide. Total length of esophagus about 360-410 μ . Nerve ring 120-152, excretory pore 450-540 μ , and vulva 640-780 μ from anterior end (Fig. 4). Tail .900-1.010 mm. long (Fig. 7). Ova 38-39 μ by 91-96 μ , and somewhat flattened on one side (Fig. 10).

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Male: Length 1.52-2.01 mm.; maximum width .103-.147 mm. (Fig. 6). Esophagus, excluding bulb, 168-191 p, long by 48-55 μ near posterior end; bulb 72-85 p long by 75-84 p wide. Total length esophagus 250-280 p.. Nerve ring 98-121 μ , and excretory pore 310-410 u from anterior end. Most posterior of mammelons 107-129 p, long and 280-500 μ from tip of tail. Second mammelon 83-95 p, long and 480-800 p from tail tip. Third mammelon 95-104 p, long and 600-950 μ from tail. Tail, including postanal cuticular projection, 180 p, long. Cuticular projection about 150 p, long. Spicule 80-94 μ long and poorly chitinized except at base. Gubernaculum 33-48 p, long with barb consisting of a superficial v-shaped, plowshare-like plate which diverges posteriorly, and which anteriorly connects with the cloacal portion of the gubernaculum by means of a narrow chitinous isthmus. Three pairs of caudal papillae present; one pair anterior to cloaca, one beside it, and one further behind on tips of projections which support small bursal alae (Fig. 9 and 11).

Host: *Dicrostonyx groenlandicus ribricatus* (Richardson).

Location: Caecum and large intestine.

Locality: Point Barrow, Alaska.

Type specimens: U. S. National Museum Helminthological Collection No. 37150 (Holotype female and allotype male).

The writers know of no way to readily distinguish the males of *S. arctica* from those of *S. obvelata*, *S. nigeriana*, *S. venteli*, and *S. muris*. However, the new species differs from these and other three-mammelon forms because the female has eggs less than 100 p, long in combination with a tail that measures .850 to 1.010 mm. in length.

Syphacia obvelata was absent from the material taken in the vicinity of Point Barrow, although it has been taken on numerous occasions from other parts of Alaska. A more complete report on host and geographical distribution of *S. obvelata* and *S. arctica* will be available when the junior author completes his survey of helminths of microtine rodents in Alaska.

Syphacia citelli n. sp.

Male: Length 3.06-3.60 mm.; width 0.21 to 0.25 mm. in middle of body. Cervical cuticular inflation 205-270 p long. Esophagus, excluding bulb, 286-327 p, long by 51-66 p wide near posterior end; bulb 100-113 p long by 95-117 μ wide. Total length esophagus 385-439 u., Nerve ring 107-143 p, and excretory pore .920-1.03 mm. from anterior end. Most posterior of mammelons 145 to 260 p long and .800-1.00 mm. from tip to tail.

Second mammelon 177-240 μ long and 1.35-1.70 mm. from tail tip. Tail, including postanal cuticular projection, 169-213 μ , long; cuticular projection 132-171 μ long. Spicule 78-108 long and poorly chitinized except at base. Gubernaculum 23-27 μ long, with barb projecting backward into subcuticular tissue from distal third of shaft. Three pairs of caudal papillae present; one pair just anterior to cloaca, one posterior to it, and one further behind on tips of projections which support small bursal alae.

Female: Length 8.1-13.0 mm.; width .49-.62 mm. just posterior to vulva. Cervical cuticular inflation .320-.460 mm. long. Lateral alae begin just behind cuticular inflation and extend to level of anus. Esophagus, excluding bulb, 470-553 μ , long by 81-91 μ , wide near posterior end; bulb 150-170 μ long by 158-172 μ wide. Total length esophagus 630-720 μ . Nerve ring 150-200 μ , excretory pore 1.38-1.92 mm., and vulva 2.75-3.88 mm. from anterior end. Tail 2.30 to 3.76 mm. long. Ova 93-109 μ long and with shape characteristic for genus.

Host: *Citellus armatus* (Kennicott).

Location: Caecum.

Locality: Jackson Hole Wildlife Park, Moran, Wyoming.

Type specimens: U. S. National Museum Helminthological Collection No. 37152 (holotype male and allotype female).

Syphacia citelli can be distinguished from its close relative *S. eutamii* by the larger size of both sexes, the (proportionately) greater length of the post-anal cuticular projection of the male, and the more posteriorly located vulva of the female. In addition, the cephalic characters differ very discreetly. Each of the lips of *S. eutamii* is bisected by a narrow crest on its surface (Fig. 12). This is missing from *S. citelli* (Fig. 3), the lips having an even and convex surface with very slight striations pointing medially. The inner circle of circumoral papillae is somewhat more prominent in *S. citelli*.

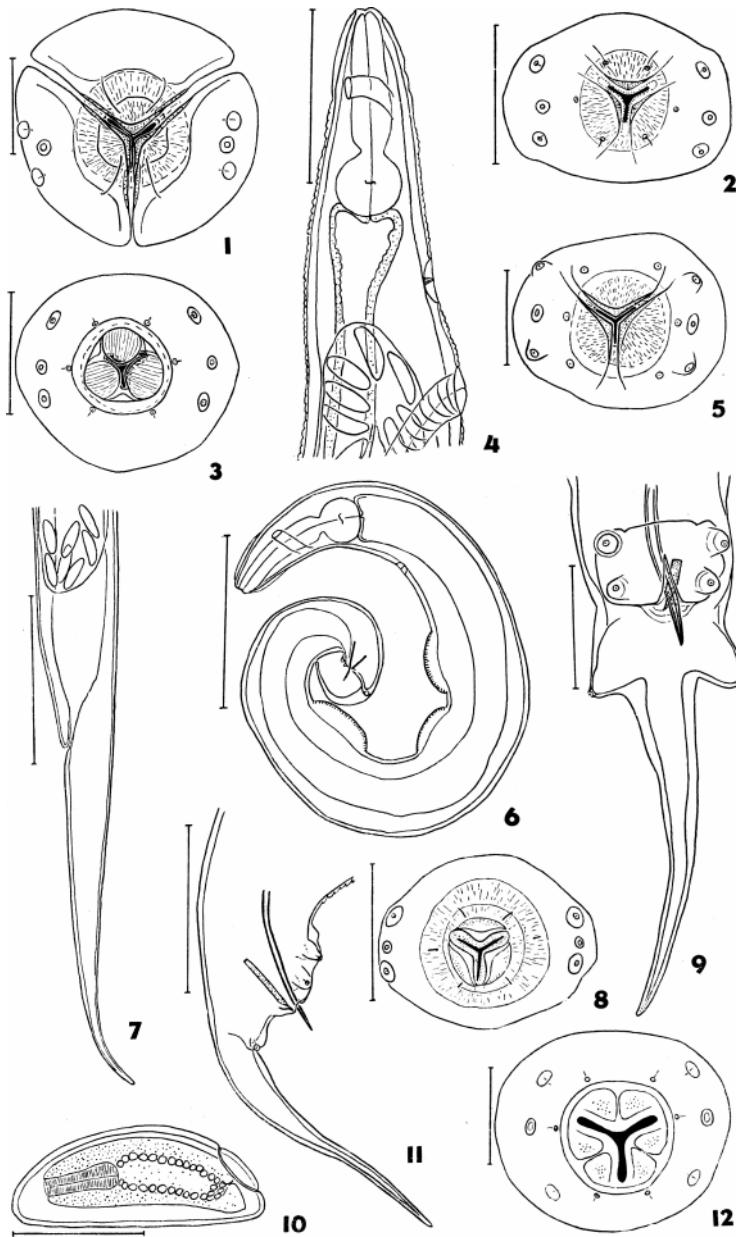
In the description of *S. eutamii* (Tiner, 1948) this circle was omitted because it was considered inadvisable to mention these papillae before depositing slides which demonstrate them convincingly in a museum. Chitwood and Chitwood (1938) stated that *S. obvelata* has no inner circle of circumoral papillae. By examining cephalic mounts in glycerin jelly, the writer has repeatedly found the nerve fibers corresponding to the dorsals and ventrals of the inner circle in specimens of *S. obvelata* from *Microtus* of Wyoming (Fig. 2) and Alaska. The inner lateral tracts were also seen in a few specimens, but required more preparation and study before they could be made out. Freshly collected and unfixed *S. obvelata* from *Mus musculus* at Champaign, Illinois, were stained with methylene blue and were found to have an inner circle of six papillae at the cuticular surface.

PLATE I

Scales for Figures 1, 5, and 12 represent 25 μ ; for 2 and 8, 30 μ ; for 3, 9, and 10, 50 μ ; for 4 and 6, 300 μ ; for 7, 500 μ ; for 11, 100 μ .

1. *En face view* of *S. thompsoni* from *Glaucomys sabrinus macrotis*, in Wisconsin (U. S. N. M. Helm. Coll. No. 37156).
2. *En face view* of *S. obvelata* from *Microtus* in Alaska. (U. S. N. M. Helm. Coll. No. 37157).
3. *En face view* of *S. citelli* (U. S. N. M. Helm. Coll. No. 37152)
4. Anterior end of *S. arctica*, female.
5. *En face view* of *S. arctica*. (U. S. N. M. Helm. Coll. No. 37150)
6. Male *S. arctica*.
7. Tail of female, *S. arctica*.
8. *En face view*, *S. peromysci* from *Peromyscus maniculatus bairdii* in Wisconsin (U. S. N. M. Helm. Coll. No. 37155).
9. Ventral view, posterior extremity of *S. arctica*.
10. Egg of *S. arctica*.
11. Side view, posterior extremity of *S. arctica*.
12. *En face view*, *S. eutamii* from (type locality and host) *Eutamias minimus*, Grand Marias, Minn. (U. S. N. M. Helm. Coll. No. 37154).

PLATE I



Six inner circle papillae could be seen in *S. citelli*, *S. eutamii*, and *S. arctica* (Fig. 3, 12, and 5). Neither the inner laterals of *S. thompsoni* nor their corresponding nerve tracts could be seen with the techniques employed. These included slight tinting of the glycerin jelly with aniline blue, or darkening specimens with osmic acid, or staining them with Semichon's acetic carmine. The nerves corresponding to inner dorsal and inner ventral papillae of *S. thompsoni* (Fig. 1) turn inward and travel a long distance medially before terminating at or near the surface. These tracts also show a tendency toward incurving in *S. obvelata* and *S. peromysci* (Fig. 2 and 8), but in lesser degrees, and the inner laterals of these last mentioned two end with almost no incurving. All six nerve tracts of *S. arctica* end after coming directly forward to the surface.

LITERATURE CITED

- Chitwood, B. G. and M. B. Chitwood
1938 An introduction to nematology. Section I, Part II, p. 58. Privately printed, Babylon, New York.
- Tiner, Jack D.
1948 *Syphacia eutamii* n. sp., from the least chipmunk, *Eutamias minimus*, with a key to the genus (Nematoda: Oxyuridae). Journ. Parasitol., vol. 34, p. 87-92.

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